

What is claimed is:

1. A waveguide unit comprising:

a vertically polarized waveguide;

a horizontally polarized waveguide; and

5 a waveguide type-polarized wave converter interposed between said vertically polarized waveguide and the horizontally polarized waveguide;

said waveguide type-polarized wave converter

having a slit on a face vertical to its guiding direction,

10 the shape of said slit being constituted by combination of two quadrate parts and a connecting part for connecting the two quadrate parts, each of said quadrate parts being on a plane which contains orthogonal coordinate axes X and Y, and symmetrically located about the Y axis, each center point of
15 the quadrates being located on the X axis.

2. The waveguide unit according to claim 1, wherein

the dimension in the direction to which the microwave travels is substantially set to $1/4$ of the group wavelength.

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3. The waveguide unit according to claim 1 or 2, wherein

each side of said quadrates is at an angle of 45 degrees with the X axis.

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4. The waveguide unit according to either one of claim 1 to 3, wherein those polarized waveguides and polarized wave converter are integrally manufactured but can be divided into two parts.

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5. The waveguide unit according to claim 4, wherein

said divided face is at an angle of 45 degrees with the X axis
or Y axis.

6. The waveguide unit according to claim 4, wherein
5 at least one wall angle of the waveguide unit differs
slightly from 0, 45, or 90 degrees.

7. The waveguide unit according to claim 4, wherein
said quadrate parts of the slit are rounded or tapered
10 at the end corners.

8. The waveguide unit according to claim 1, wherein
said connecting part forms a ridge structure having a narrow
and straight shape.

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